

Fig. 1
(PRIOR ART)

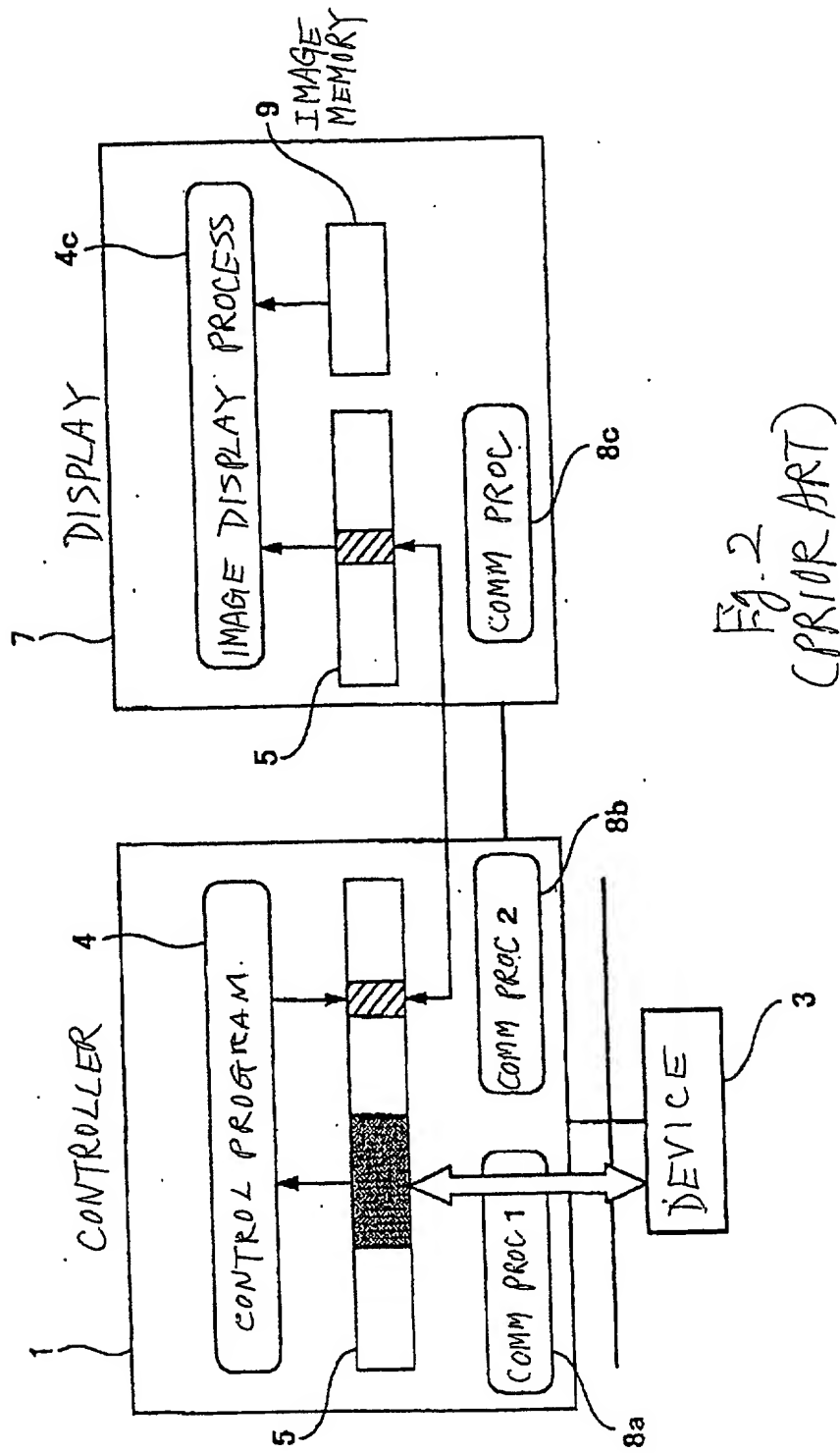


Fig. 2
(PRIOR ART)

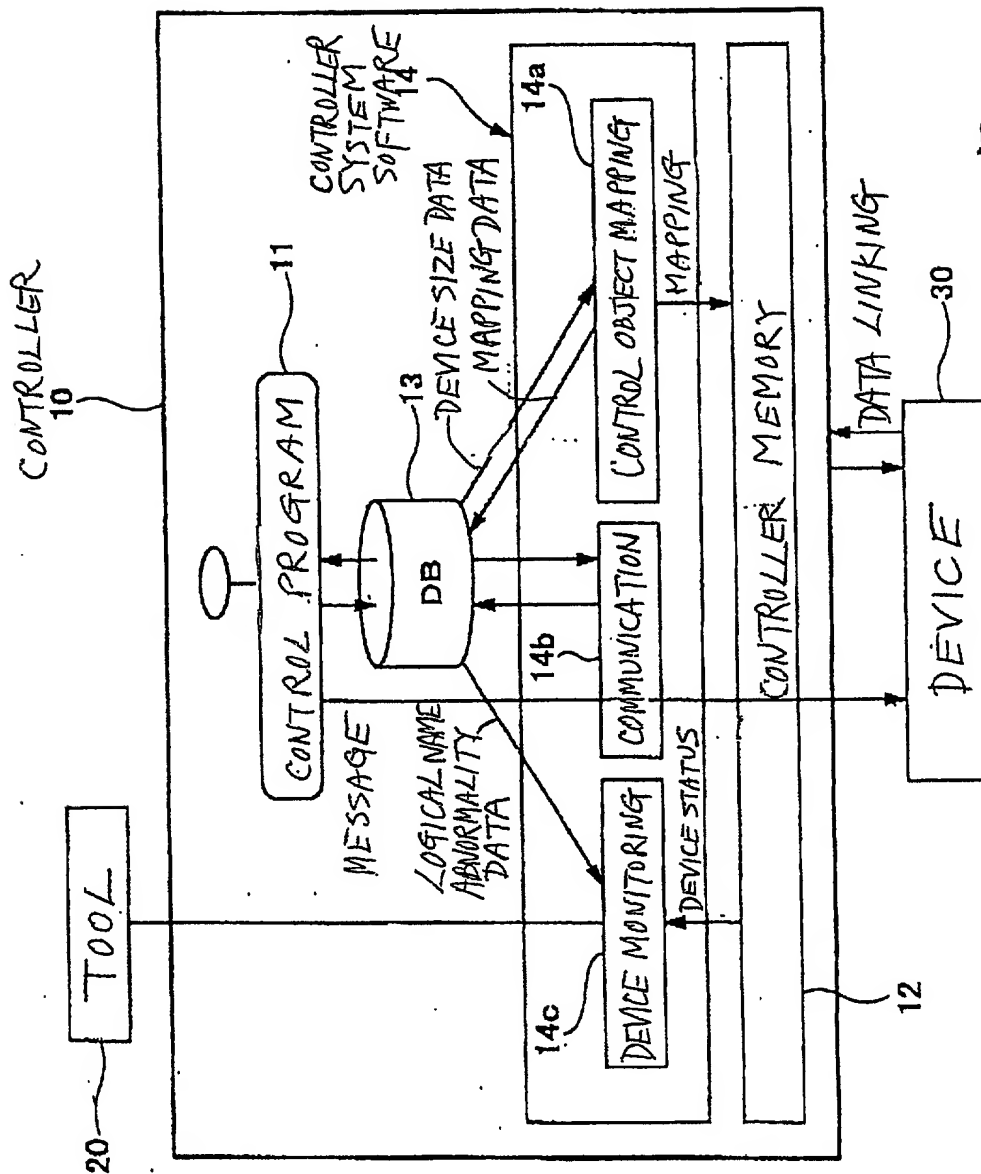
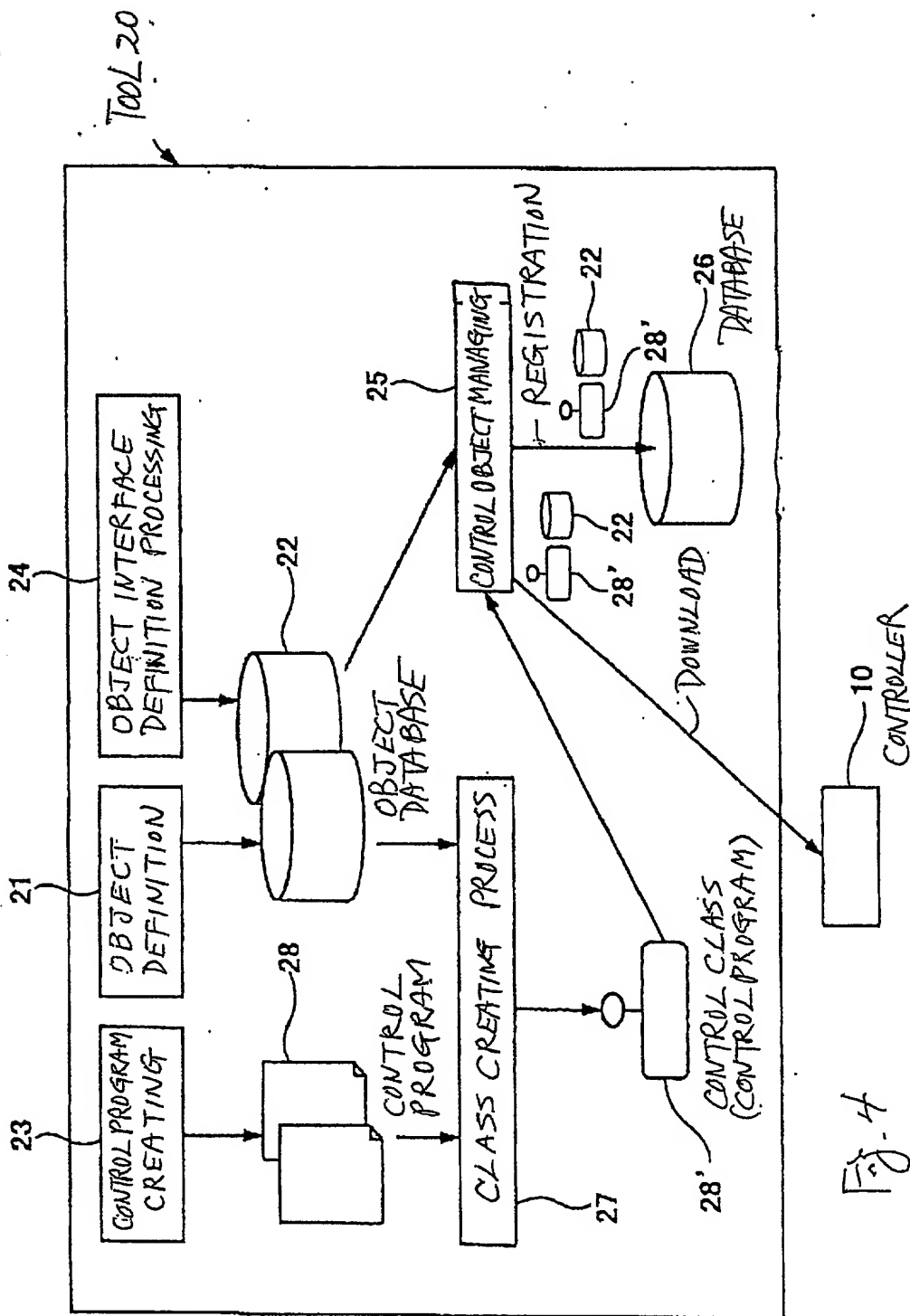


Fig. 3



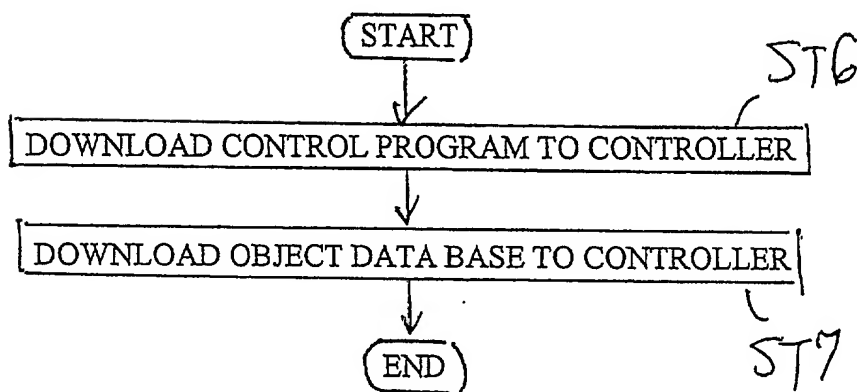
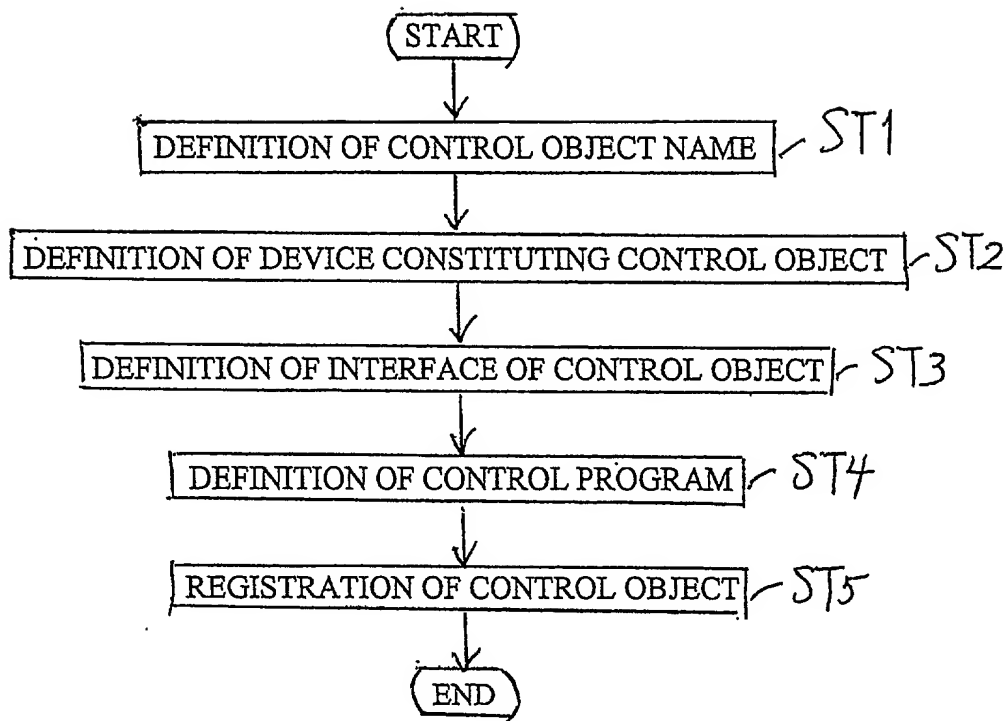


FIG. 6 is a block diagram of a hardware structure 100, which includes a hardware catalog 110, a hardware structure editor 120, and a hardware structure viewer 130. The hardware catalog 110 includes a list of hardware components 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.

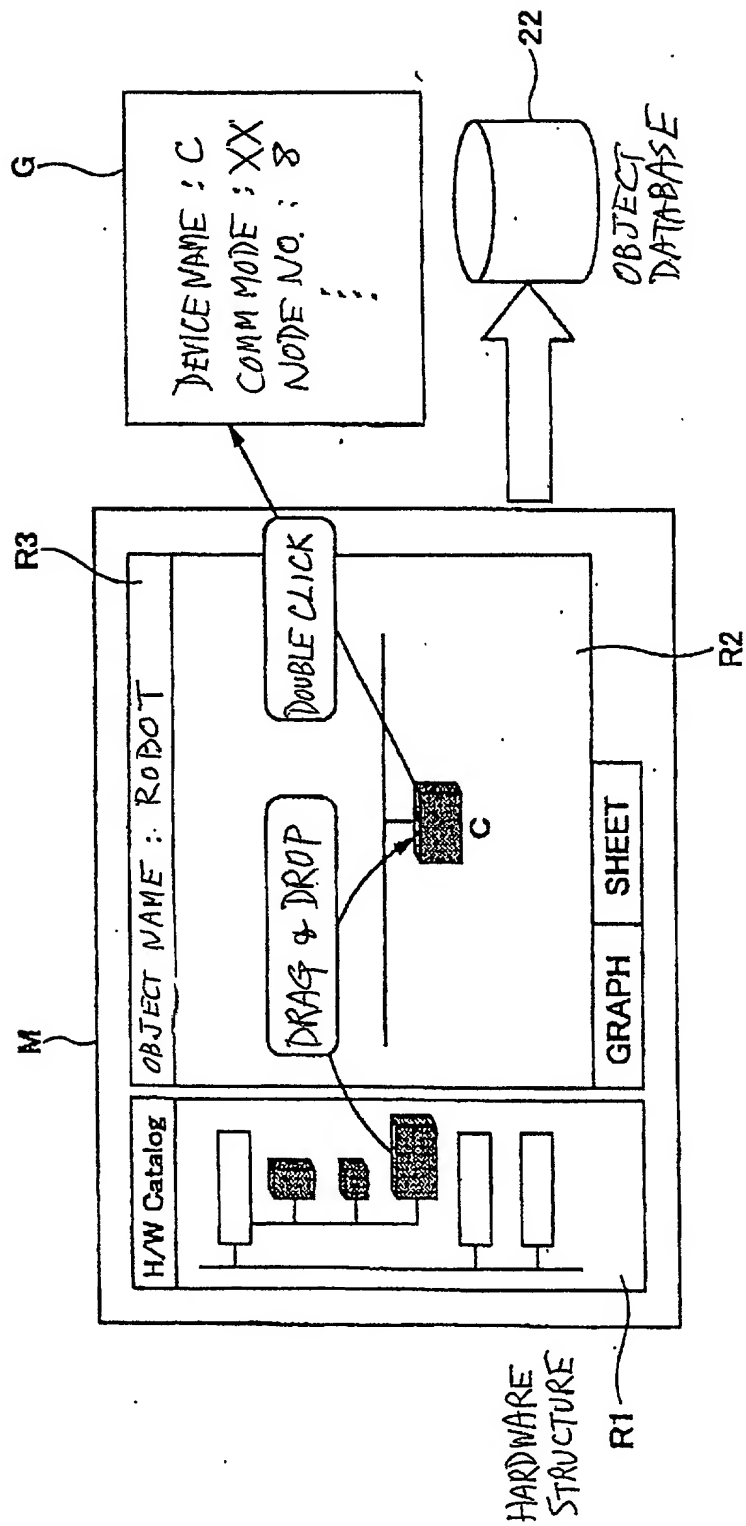


Fig. 6

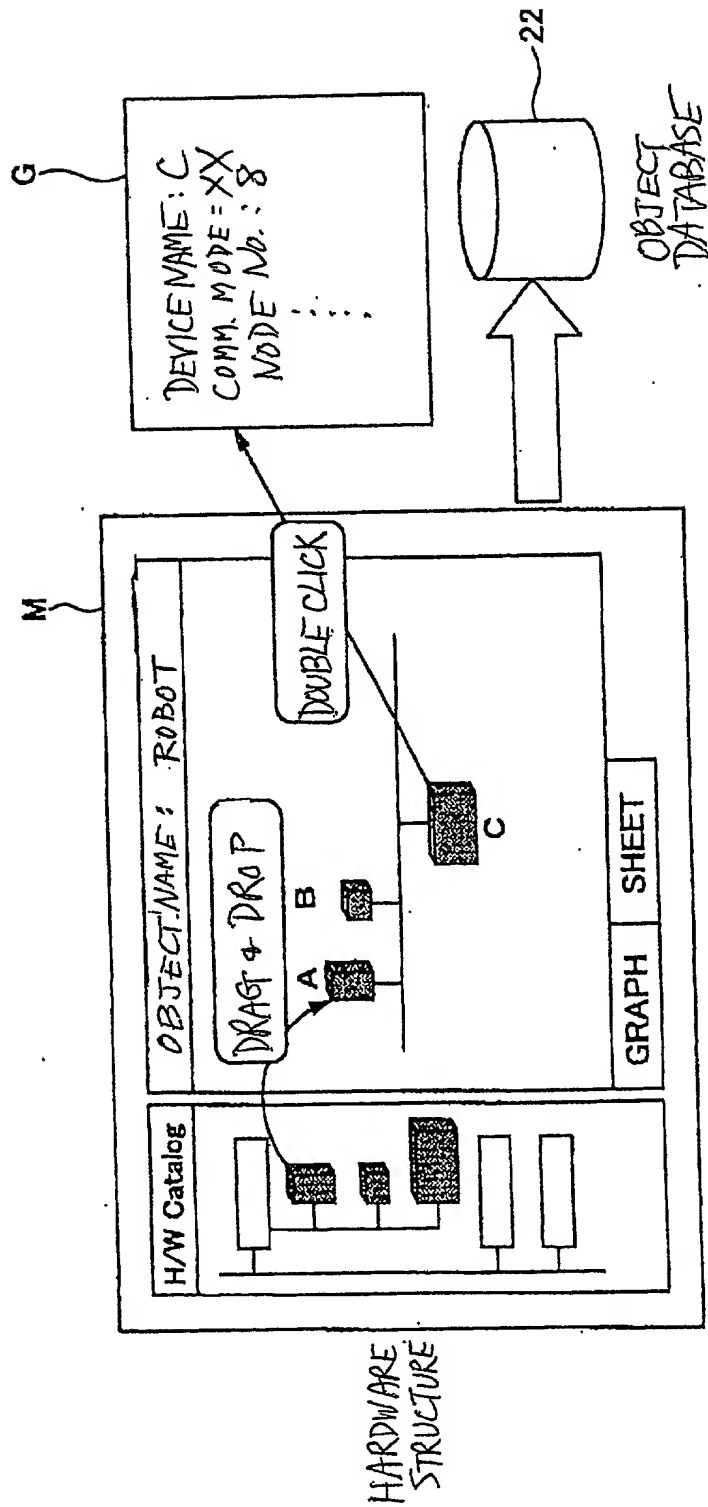


Fig. 7

```
[Profile]
ObjName== RoBOT

DeviceNum=1
DevName0=C
SerialNo0=
NodeNo0==8 // COMMUNICATION ADDRESS
INSize0=2 //byte
INAddr0= // MAPPED ADDRESS TO CONTROLLER MEMORY
OUTSize0=2 //byte
OUTAddr0= //MAPPED ADDRESS TO CONTROLLER MEMORY
Communication0=0 //COMMUNICATION MODE
```

```
DeviceNum=1
DevName0=C
SerialNo=
NodeNo=8 // COMMUNICATION ADDRESS
INSize=2 //byte
INAddr= // MAPPED ADDRESS TO CONTROLLER MEMORY
OUTSize=2 //byte
OUTAddr= //MAPPED ADDRESS TO CONTROLLER MEMORY
Communication0=0 //COMMUNICATION MODE
```

```

BYTE Add_Val(BYTE X, BYTE Y)
{
    BYTE A,B;C
    Get_Attribute("IN_param1", A);
    Get_Attribute("IN_param2", B);
    C=A+B;
    Set_Attribute("OUT_param1, C");
    Return C
}

```

```
DeviceNum=3
DevName0=C
SerialNo=
NodeNo=8
INSize=2
INAddr=
OUTSize=2
OUTAddr=
Communication=0
```

```
DevName1=A
SerialNo1=
NodeNo1=3
INSize1=4
INAdr1=
OUTSize1=4
OUTAdr1=
Communication1=0
```

```
DevName2=B
SerialNo2=
NodeNo2=1
INSize2=1
INAdr2=
OUTSize2=1
OUTAdr2=
Communication2=0
```

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11/19/20

[Profile]

ObjName= ROBOT

DeviceNum=1

DevName0=C

SerialNo0=

NodeNo0=8 // COMMUNICATION ADDRESS

INSize0=2 //byte

INAdr0= // MAPPED ADDRESS TO CONTROLLER MEMORY

OUTSize0=2 //byte

OUTAdr0= // MAPPED ADDRESS TO CONTROLLER MEMORY

Communication0=0 // COMMUNICATION MODE

[Attribute]

IN_Num=2

ValName0=IN_Param1 // VARIABLE NAME

ValSize0=1 //1byte // VARIABLE SIZE

Adr0=0/0 // ADDRESS INSIDE CONTROL OBJECT(0 BIT OF 0 CH)

ValName1=IN_Param2 // VARIABLE NAME

ValSize1=1 //byte // VARIABLE SIZE

Adr0=0/8 // ADDRESS INSIDE CONTROL OBJECT(8 BIT OF 0 CH)

OUT_Num=2

ValName0=OUT_Param1

ValSize0=1 //1byte // VARIABLE SIZE

Adr0=0/0 // ADDRESS INSIDE CONTROL OBJECT(0 BIT OF 0 CH)

ValName1=IN_Param2 // VARIABLE NAME

ValSize1=1 //byte // VARIABLE SIZE

Adr0=0/8 // ADDRESS INSIDE CONTROL OBJECT(8 BIT OF 0 CH)

[Service]

[Profile]

ObjName=: ROBOT

DeviceNum=1

DevName0=C

SerialNo=

NodeNo0=8 // COMMUNICATION ADDRESS

INSize0=2 //byte

INadr0= // MAPPED ADDRESS TO CONTROLLER MEMORY

OUTSize0=2 //byte

OUTadr0= // MAPPED ADDRESS TO CONTROLLER MEMORY

Communication0=0 // COMMUNICATION MODE

[Attribute]

IN_Num=2

ValName0=IN_Param1 //VARIABLE NAME

ValSize0=1 //1byte //VARIABLE SIZE

Adr0=0/0 //ADDRESS INSIDE CONTROL OBJECT(0BIT OF 0 CH)

ValName1=IN_Param2 //VARIABLE NAME

ValSize1=1 //byte //VARIABLE SIZE

Adr0=0/8 //ADDRESS INSIDE CONTROL OBJECT(8BIT OF 0 CH)

OUT_Num=2

ValName0=OUT_Param1

ValSize0=1 //1byte //VARIABLE SIZE

Adr0=0/0 //ADDRESS INSIDE CONTROL OBJECT(0BIT OF 0 CH)

ValName1=IN_Param2 //VARIABLE NAME

ValSize1=1 //byte //VARIABLE SIZE

Adr0=0/8 //ADDRESS INSIDE CONTROL OBJECT(8BIT OF 0 CH)

[Service]

ServiceNum=1

ServiceName0=BYTEAdd_Val([IN]BYTE X[IN]BYTE Y)

Fig-12

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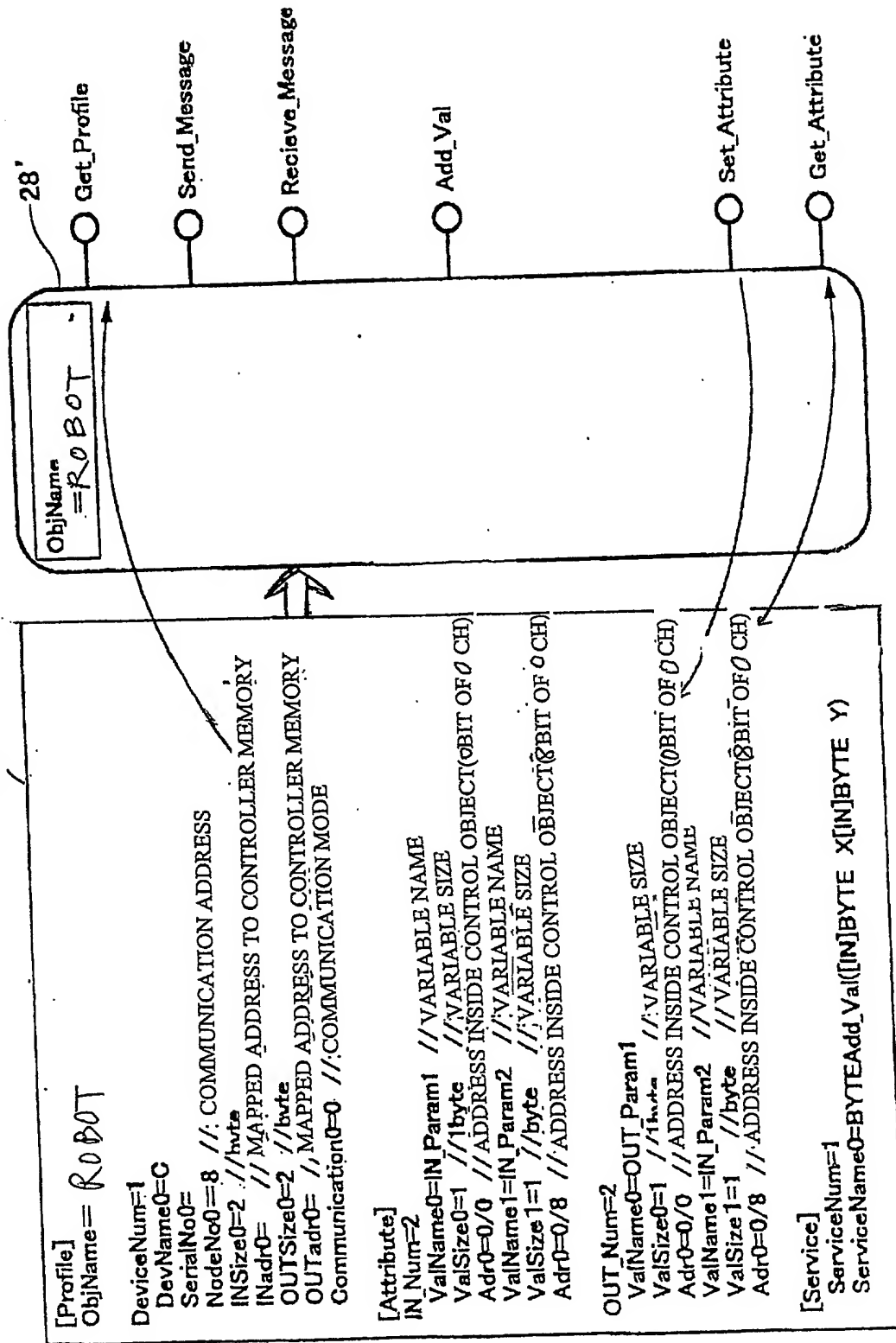


Fig 13

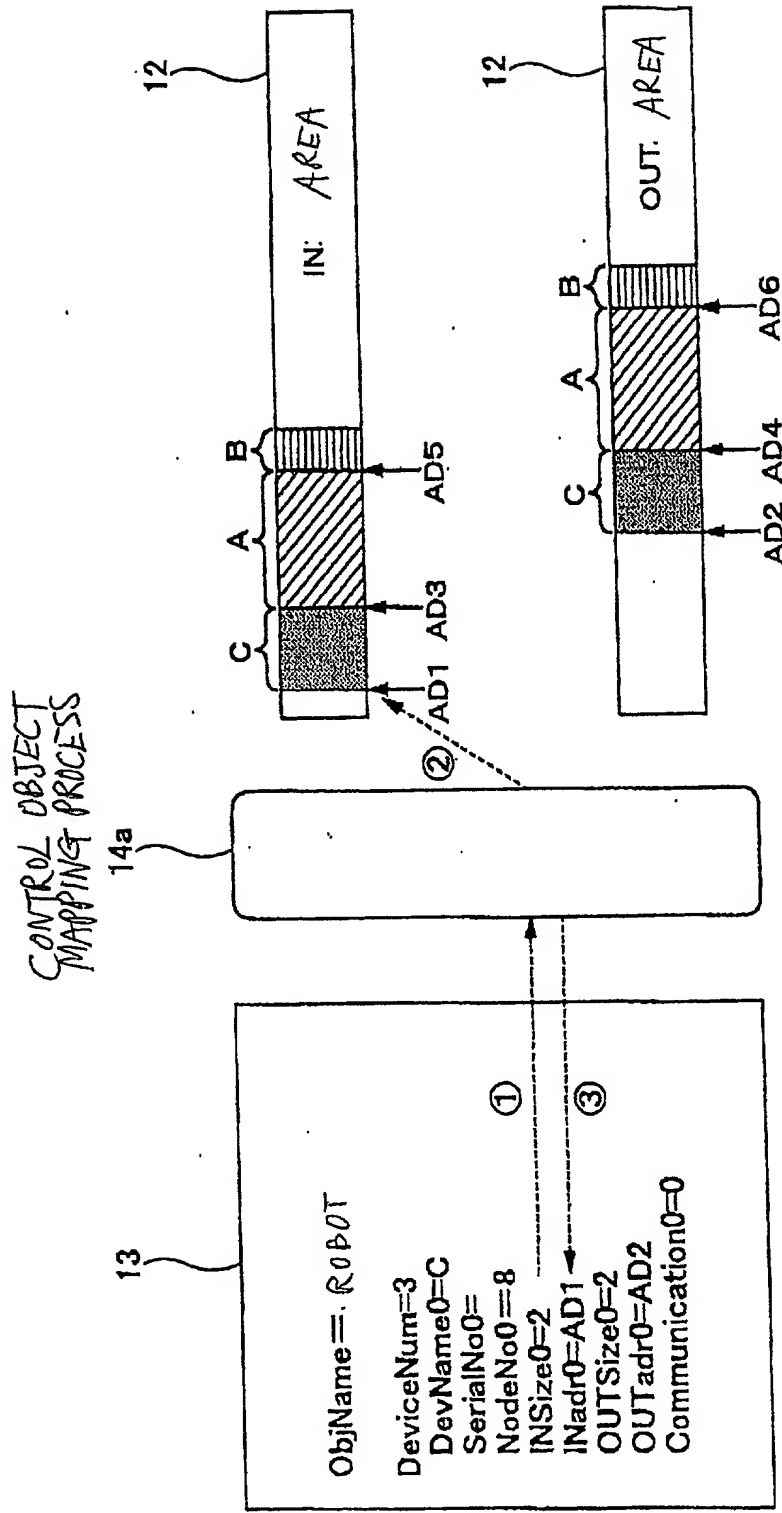


Fig. 14

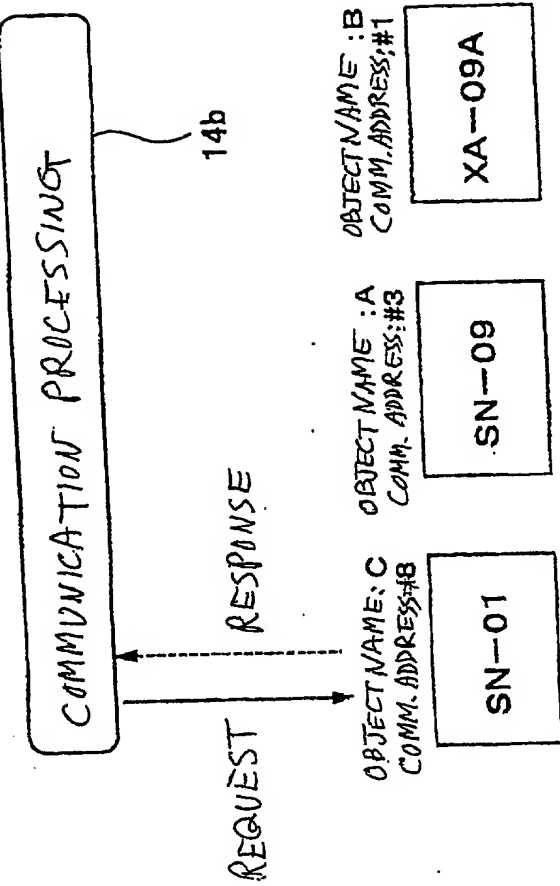


Fig. 16

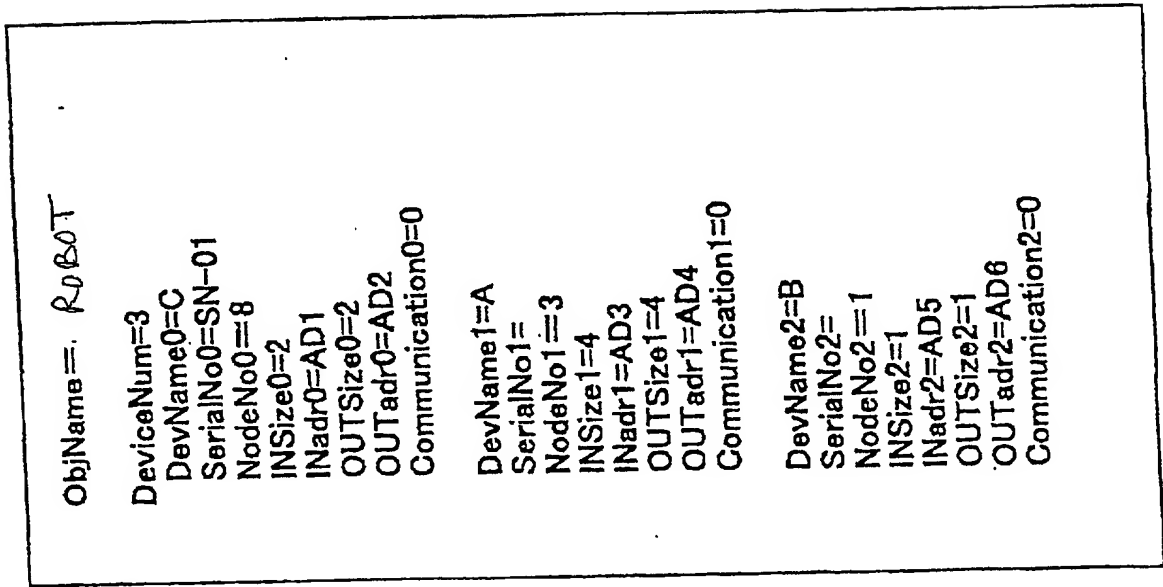
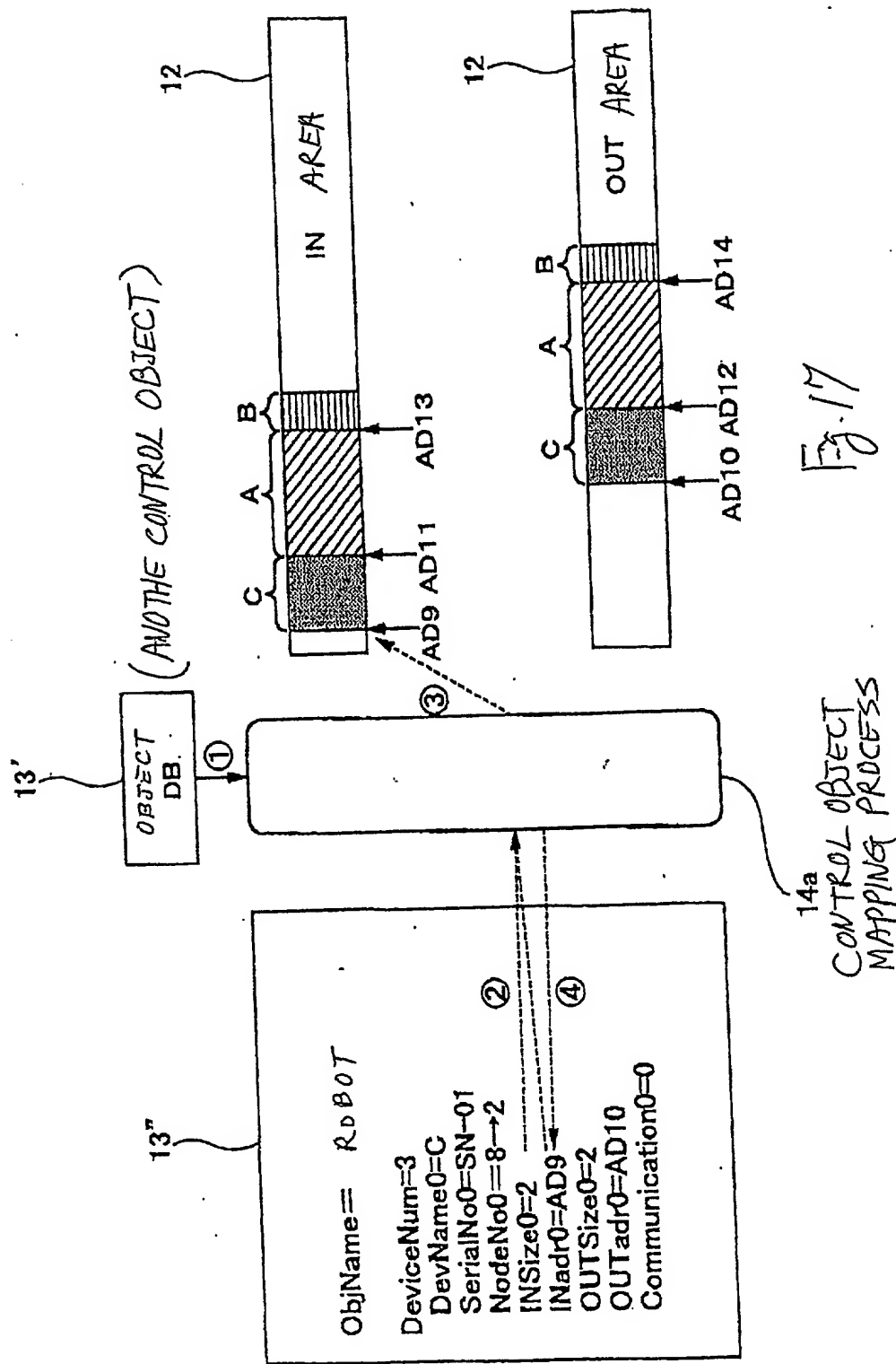


Fig. 15



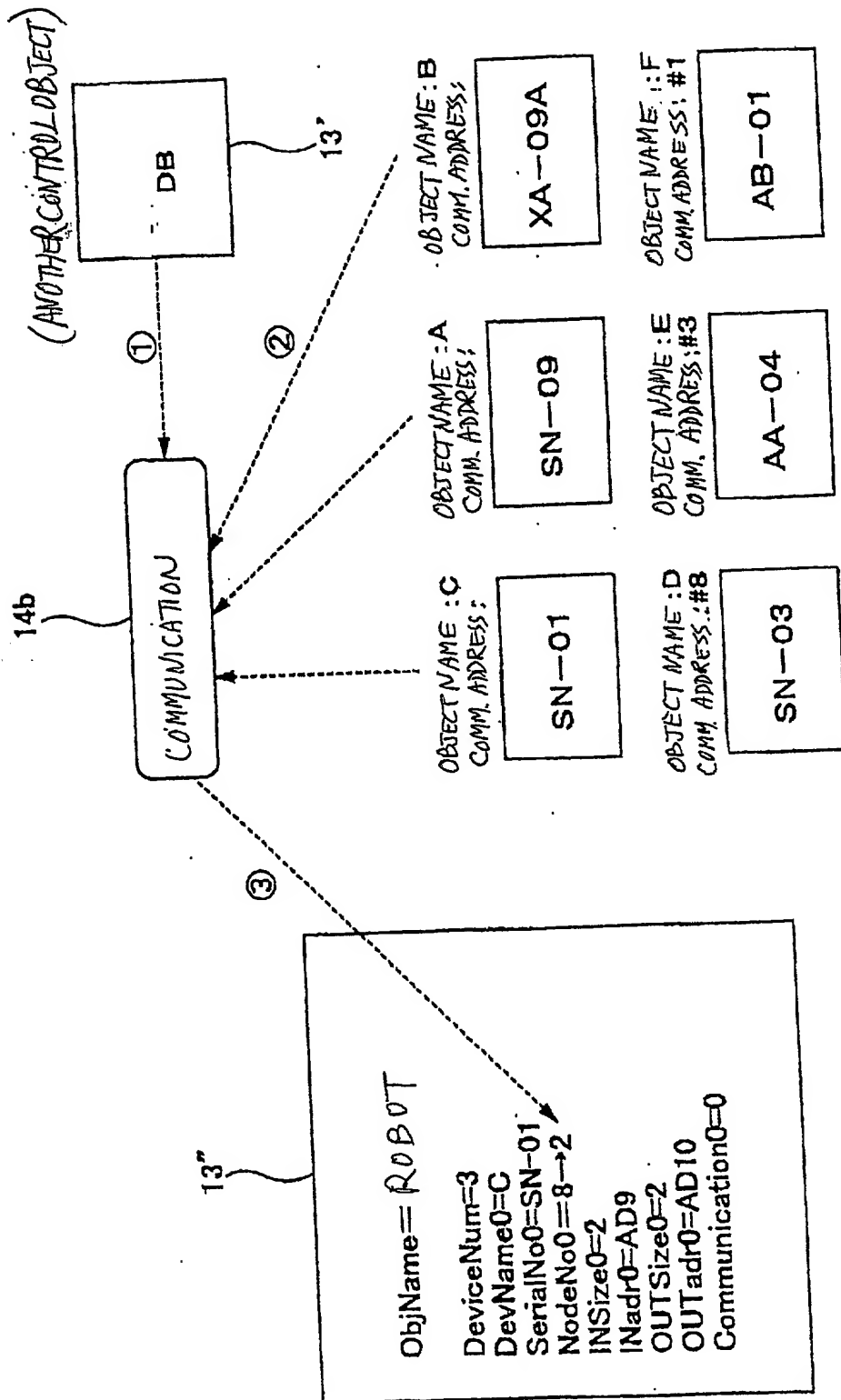


Fig-18

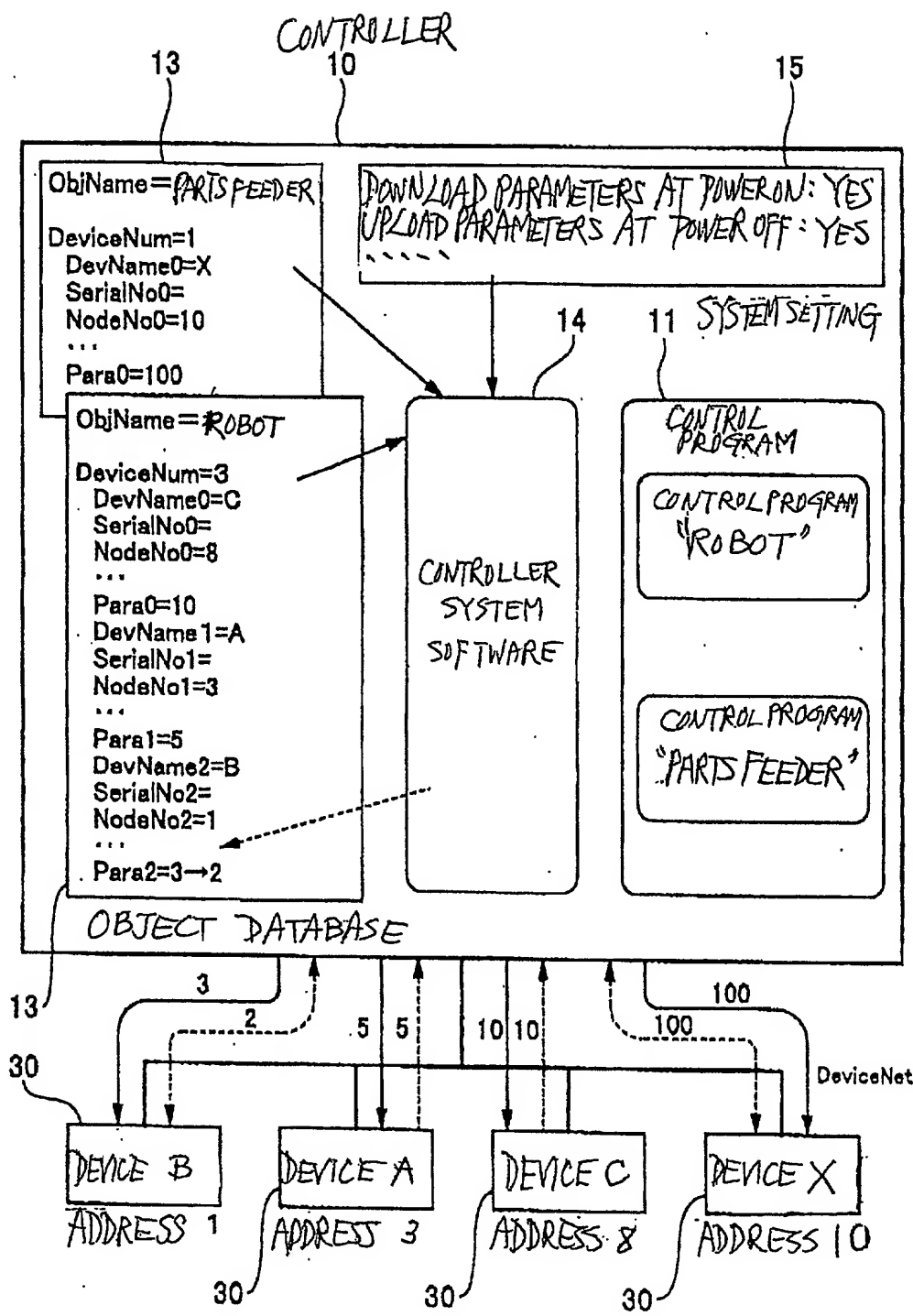


Fig. 19

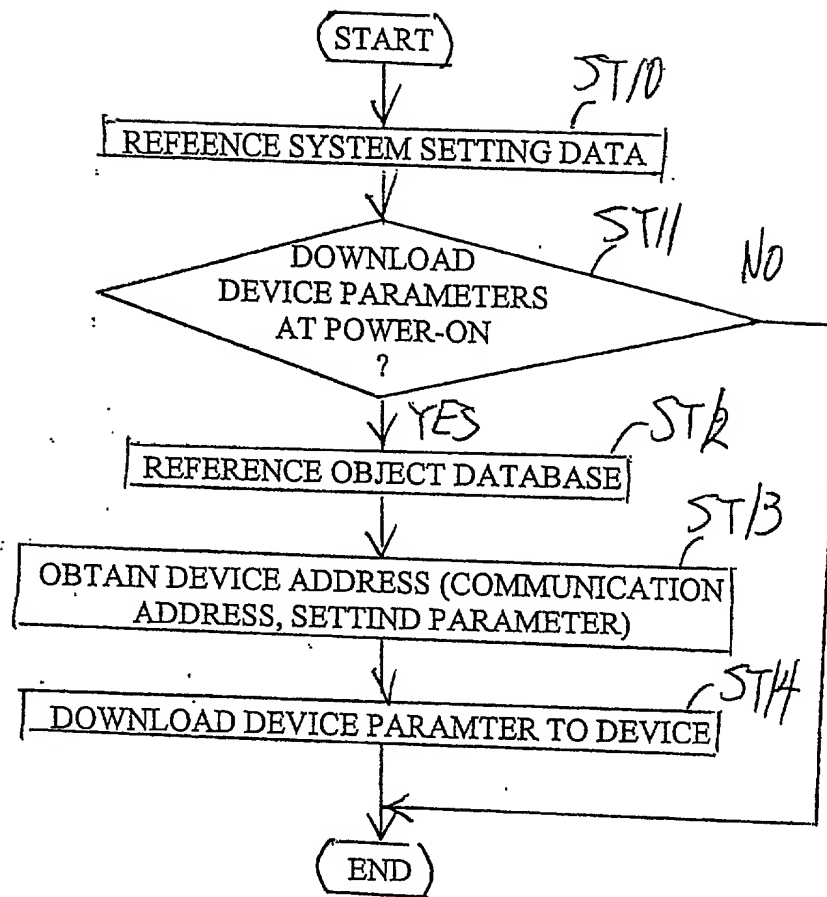


Fig. 20

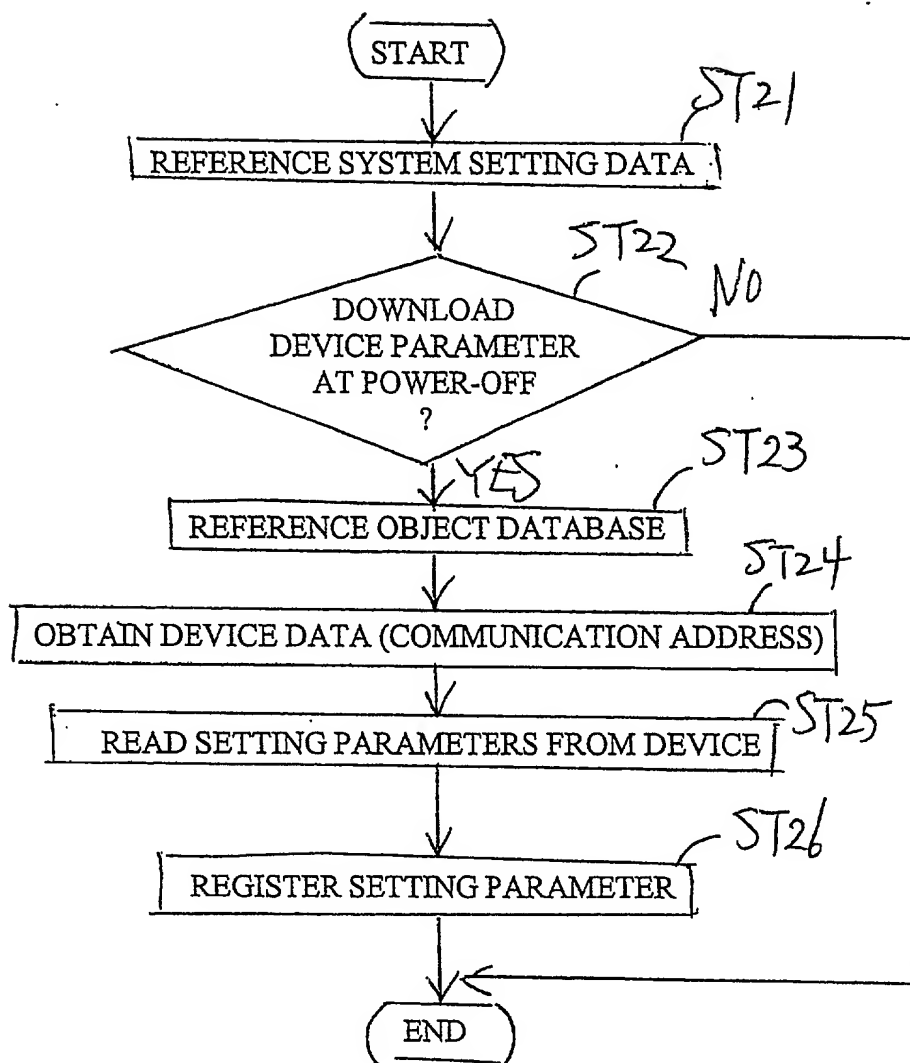
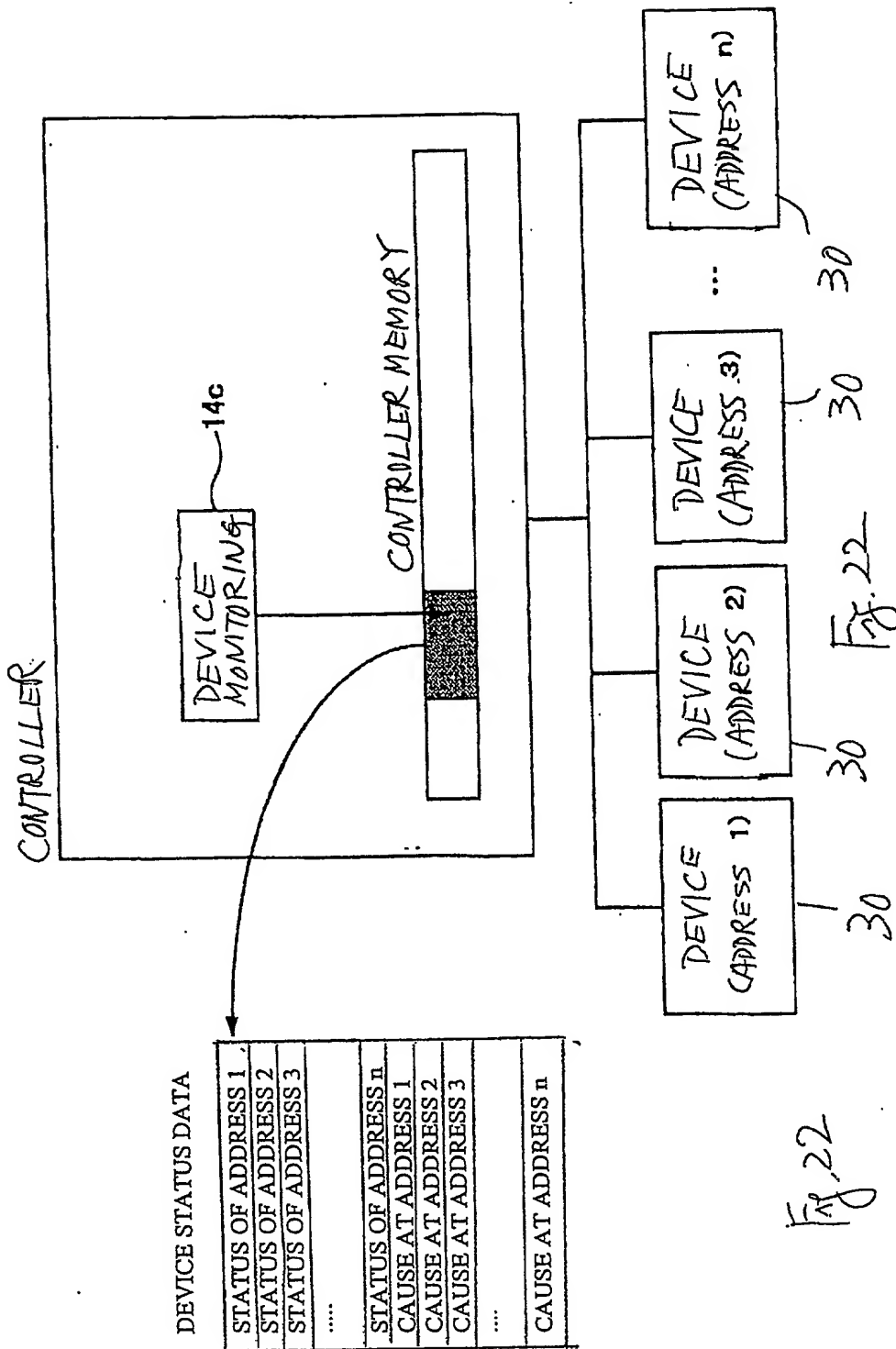


Fig. 21



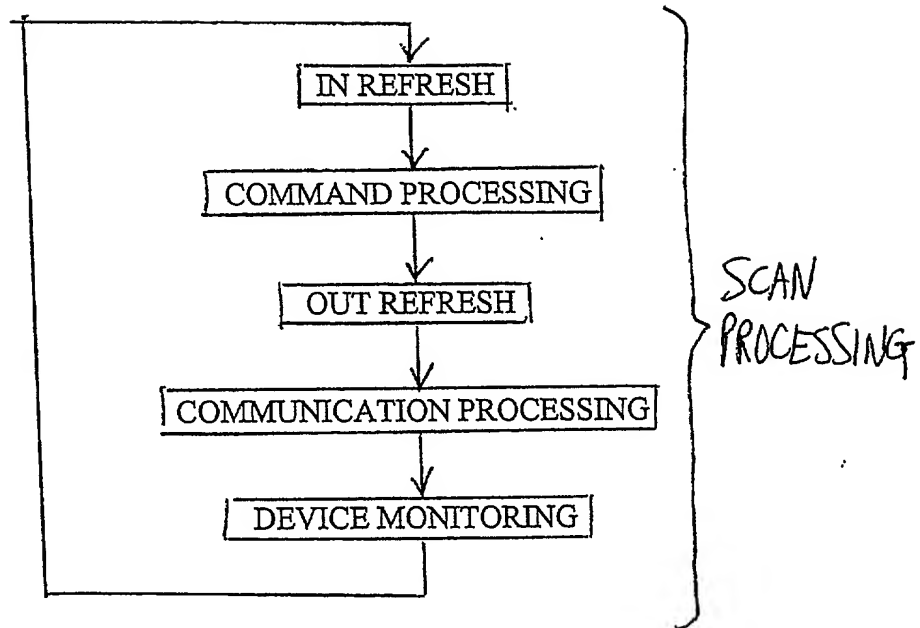


Fig. 23

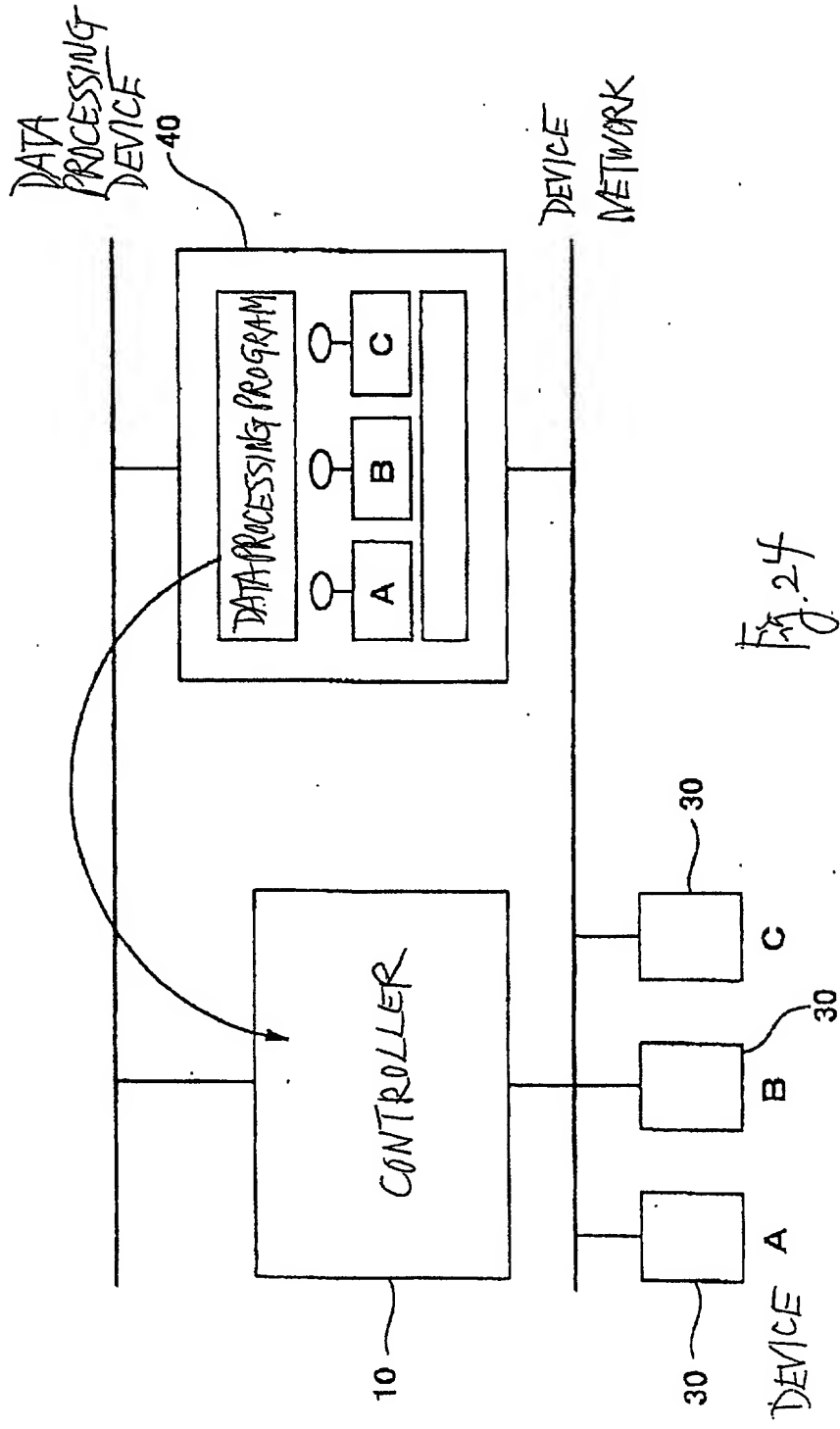


Fig. 24